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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/784,041	02/16/2001	Yoichi Mizuno	0033-0693P	2528

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EXAMINER
FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
1733	8

DATE MAILED: 10/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/784,041

Applicant(s)

MIZUNO, YOICHI

Examiner

Justin R Fischer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 2 and 3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 2 and 3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Claim 1 is cancelled per Amendment A on August 13, 2002.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada (JP 10-329515, newly cited) in view of Majumdar (US 5,503,940, of record), Matsui (JP 9-302149, newly cited), and Carter (US 5,807,918, newly cited). It is noted that the US equivalent of Takada '515 [US 6,073,669] has been supplied. As described in Table 1, Takada is directed to a heavy duty pneumatic tire having the following chafer rubber composition: natural rubber (40 phr), polybutadiene rubber (60 phr), HAF carbon black (65 phr), sulfur or "S" (1 phr), and accelerator or "A" (3 phr), such that S/A is equal to one-third. The reference, however, is silent with respect to (a) the inclusion of 1,3-bis(citraconimidiomethyl) benzene or BCI in an amount between 0.2 and 0.5 phr and (b) the BET surface area of the HAF carbon black. Regarding the inclusion of BCI, Majumdar describes the use of bis-imide compounds in an amount between 0.1 and 5 phr, and specifically BCI [Tradename: Perkalink 900], in tire rubber components in order to **improve blowout resistance, reduce heat generation, improve durability, and reduce reversion** (Column 2, Lines 27-54 and Column 3, Lines 13-21). With respect to

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the surface area of the HAF carbon black of Takada, conventional HAF carbon blacks (i.e. N330) used in the tire industry have a BET surface area that falls within the broad range of 70-120 m²/gram, as evidenced for example by Matsui (Page 4) and Carter (Column 5, Table I). Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to (a) include BCI in an amount between 0.2 and 0.5 phr and (b) include carbon black with a BET surface area between 70 and 120 m²/gram, in view of Majumdar and Matsui/Carter, respectively, for the benefits detailed above.

While Takada fails to suggest the use of BCI, anti-reversion agents in general are conventionally employed in tire components, especially those containing natural rubber, in order to eliminate the reduction in crosslink density and ultimately increase the strength and durability of the respective tire component. Majumdar, in turn, suggests the use of BCI in an amount between 0.1 and 5 phr in order to, among other things, **reduce heat generation, improve durability, and reduce reversion**, all of which are known to be desired characteristics of rubber chafer compositions (Column 3, Lines 13-21). Thus, in view of these benefits, one of ordinary skill in the art at the time of the invention would have readily appreciated the employment of BCI in the chafer rubber of Takada since (a) anti-reversion agents are conventionally used in tire rubber components and (b) said benefits are analogous to the well known and desired properties of rubber chafer compositions. It should be noted that although Majumdar is primarily directed to a composition in the carcass/tread region (cushion layer), the reference in no way suggests that the benefits of BCI are specific to these tire components and as such, one of ordinary skill in the art at the time of the invention

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would have readily appreciated and expected the aforementioned benefits to have been realized in additional tire components, including the chafer.

Regarding the carbon black, Takada suggests a chafer composition having HAF carbon black (i.e. N330) in an amount of 65 phr, which is directly in the middle of applicant's range. While Takada does not provide the BET surface area for said carbon black, conventional HAF carbon black is well known to have BET surface areas that fall within the broad range of the claimed invention. For example, Matsui describes multiple chafer rubber compositions in which HAF carbon black having a BET surface area of 83 m²/gram is employed (Table 2). Carter provides an additional example that describes HAF carbon black having a BET surface area of 75 m²/gram (Column 5, Lines 50-65). As such, it is evident that one of ordinary skill in the art at the time of the invention would have expected the HAF carbon black of Takada to have a BET surface area within the broad range of the claimed invention in view of conventional carbon black properties.

Response to Arguments

4. Applicant's arguments with respect to claims 1-3 have been considered but are moot in view of the new ground(s) of rejection. The rejection of claims 1-3 with Hattori has been withdrawn in light of the newly found art used in the rejection of claims 2 and 3 above.

Regarding the experimental data of Tables 3 and 4, it should initially be noted that these results are not commensurate in scope with the limitations of claim 2. As currently drafted, claim 2 is directed to a rubber composition that is **useable as a chafer**

component. However, the realized benefits set forth in Table 3 are specific to the rubber composition when it is used in a tire as a chafer (i.e. the table fails to provide "unexpected results" for the rubber composition in general). Regarding claim 3, however, Tables 3 and 4 can be used to provide evidence of "unexpected results" with the claimed rubber composition since the claim is directed to a tire having a chafer component formed of a specific rubber composition (versus a rubber composition useable as...).

In examining the results with respect to claim 3, the data is not found to be persuasive in establishing an unexpected criticality for the inclusion of BCI in amount between 0.2 and 0.5 phr. Example 1 and Comparative Example 3 have the same base rubber formulation and differ only in the amount of BCI (0.2 BCI versus 0.7 BCI). In this instance, though, the composition of Comparative Example 3 results in a lower hysteresis, the same hardness, the same breaking strength properties (before and after aging), and a higher elongation at break (before and after aging). Furthermore, the rubber compositions of Example 2 and Comparative Example 3 have the same base rubber composition (differ in BCI amount) and exhibit almost the identical properties for each of the aforementioned performance measurements. Thus, applicant has not established any criticality for the claimed range of 0.2-0.5 phr for BCI. It should additionally be noted that Majumdar attributes the reduction of hysteresis, increased durability, and reversion resistance to the use of BCI. As such, one of ordinary skill in the art at the time of the invention would have expected the rubber compositions of Takada to exhibit improvements in these areas upon the introduction of BCI in an

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amount between 0.1 and 5 phr, which incorporates the entire range of the claimed invention.

Conclusion


5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(703) 605-4397**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.


Justin Fischer

October 10, 2002


Michael W. Ball
Primary Patent Examiner
Technology Center 1700